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Dissociating Contents of Consciousness from Contents of Short-Term Memory

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Short-term Memory and Consciousness

Consciousness is often treated synonymously with short-term memory; information available for verbal report has to be both conscious and encoded into some type of short-term memory store. Thus, it is tempting to merge the two concepts into one. Nevertheless, one may distinguish access to information, from the experiential quality of the representation (Block, 1995). Here we attempt to disentangle the two phenomena.

Perceptual Awareness Scale (PAS)

Rather than assuming that observers experience stimuli as an all or nothing phenomenon, Ramsøy & Overgaard (2004) had participants create their own categories when describing their perceptual experience of a stimulus. These seem stable between subjects who form four different categories; 1. no experience, 2. glimpse, 3. almost clear experience, 4. clear experience.

Visual Short-Term Memory (VSTM)

Measuring VSTM we wanted to use a resolution paradigm (Wilken & Ma, 2004), however, instead of colours that are often used our stimulus consisted of Landolt rings. Data was fitted with the MemToolbox for MatLab (Suchow, Brady, Fougnie, & Alvarez, 2013) using a standard mixture model. Hereby, we isolate two parameters; a guessing rate (g) and a measure of resolution (SD).

Design

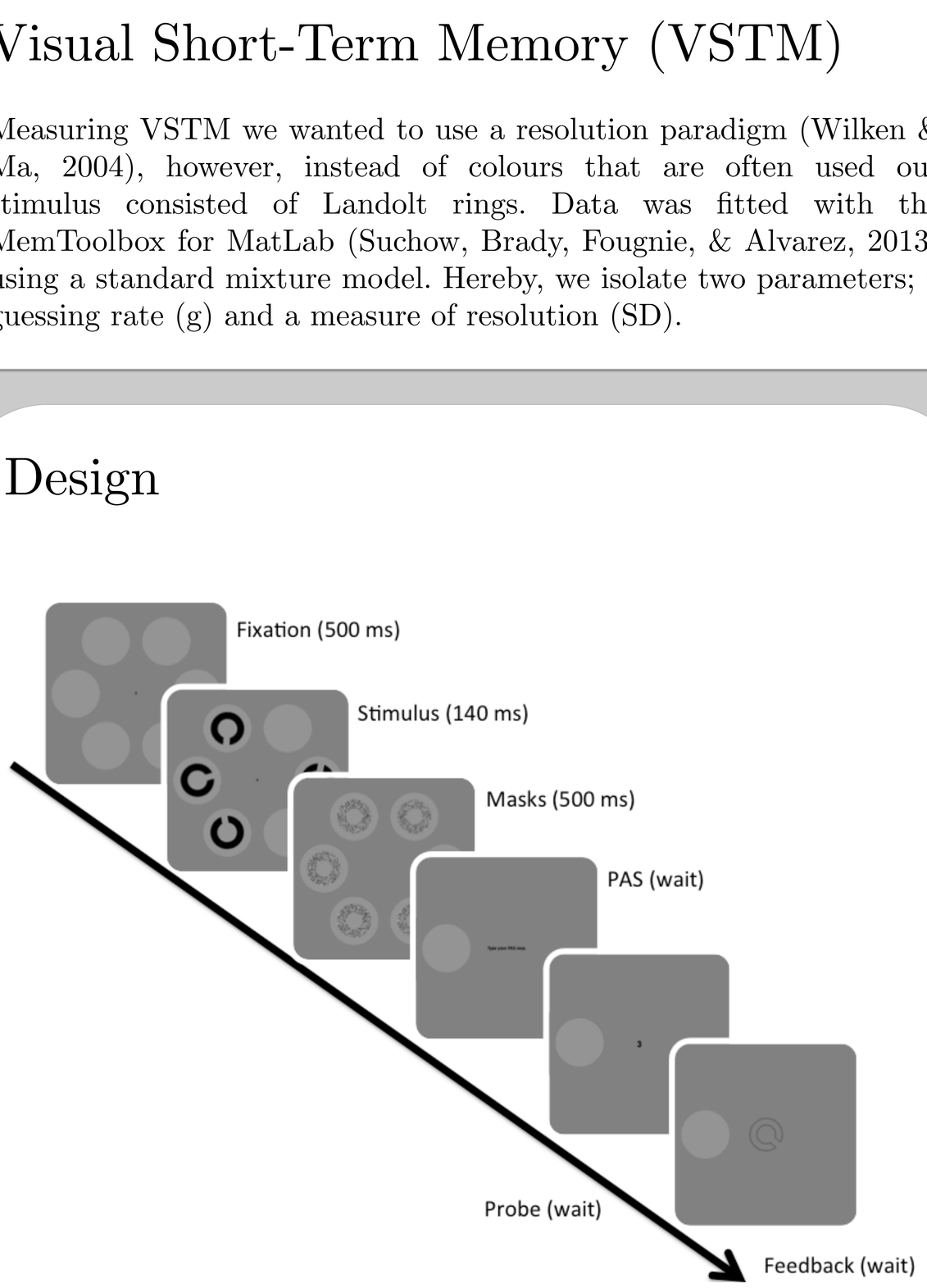

Figure 1. Trial outline of the experiment.

VSTM and Set-Size

Results

Increasing Set-Size (SS) increases both parameters, g and SD.

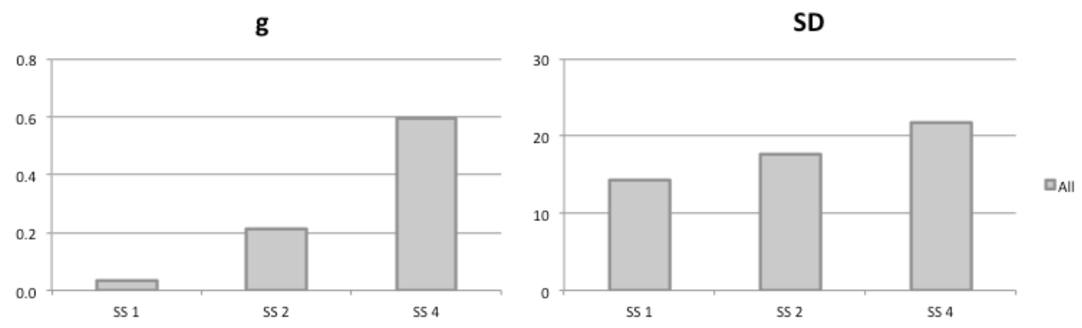

Figure 2. Parameter estimates of g (left pane) and SD (right pane) for each of the three set-size conditions.

VSTM and PAS

Results

With increasing perceptual awareness both parameters decrease.

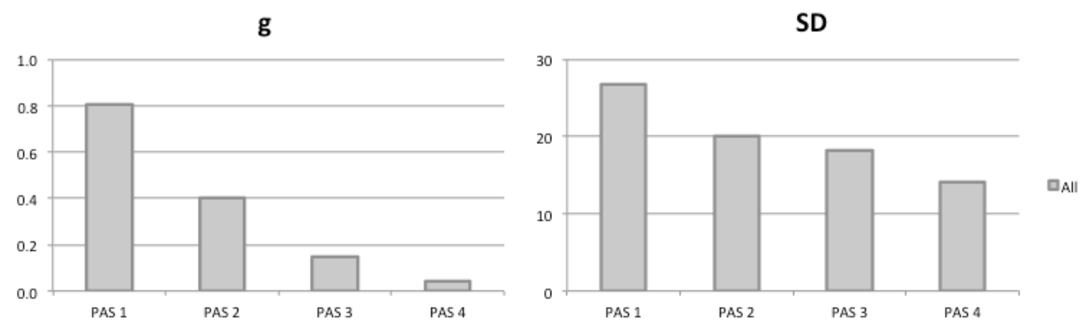

Figure 3. Parameter estimates of g (left pane) and SD (right pane) for each of the four PAS ratings.

Combining Set-Size with PAS

Results

There are systematic set-size effects within individual PAS ratings.

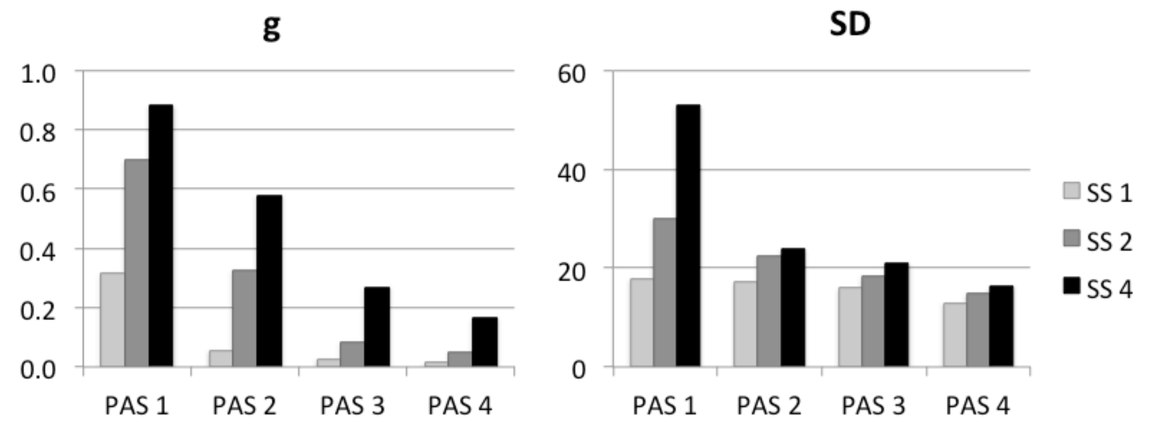

Figure 4. Parameter estimates of g (left pane) and SD (right pane) for each of the four PAS ratings and set-sizes; 1, 2, and 4.

Discussion

Effect could bu due to increased target confusability? No!
Performance differences between low and high performers? No!

We find set-size effects within individual experiential categories.

Your thoughts are very welcome ...